Figure 1

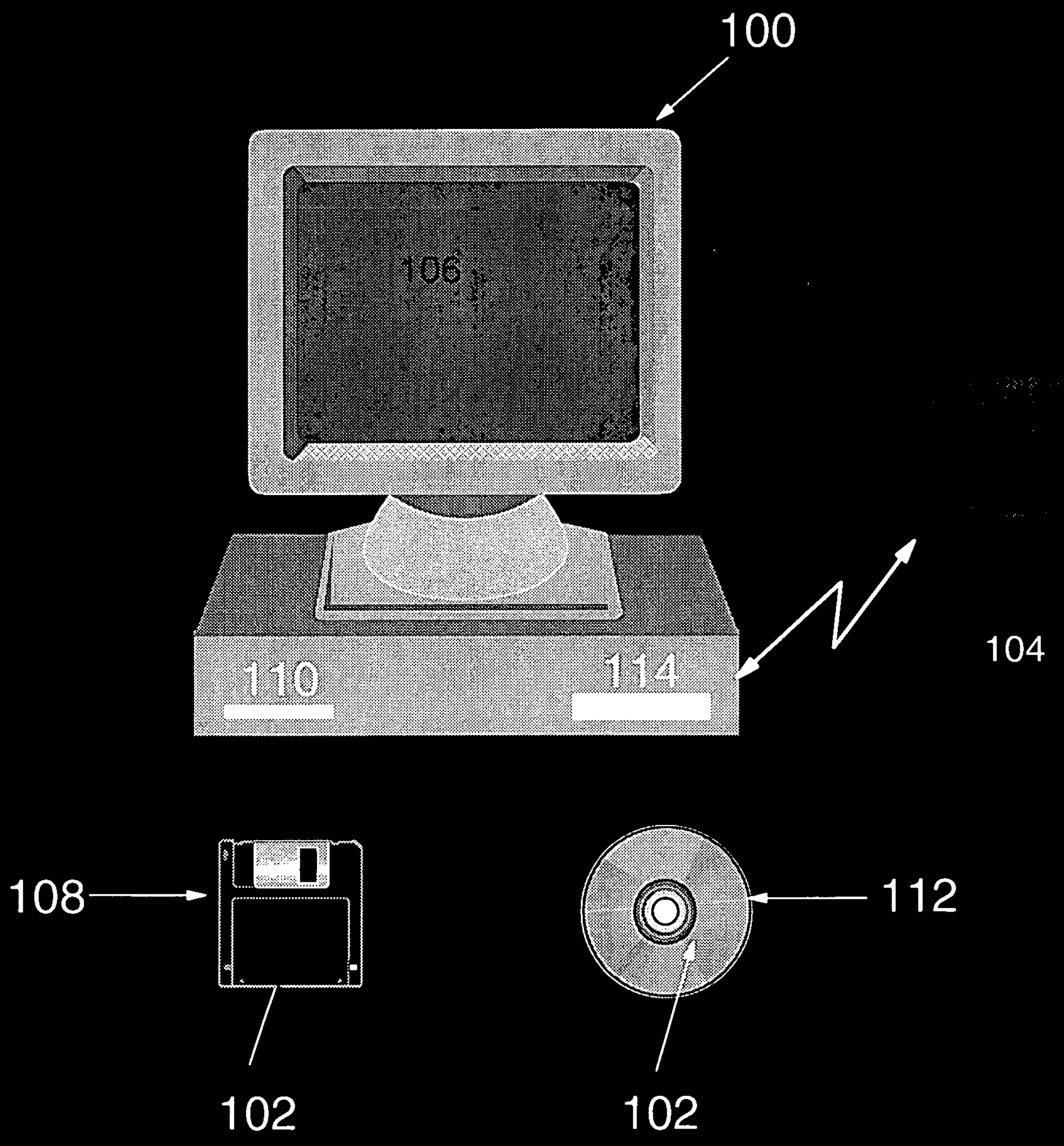
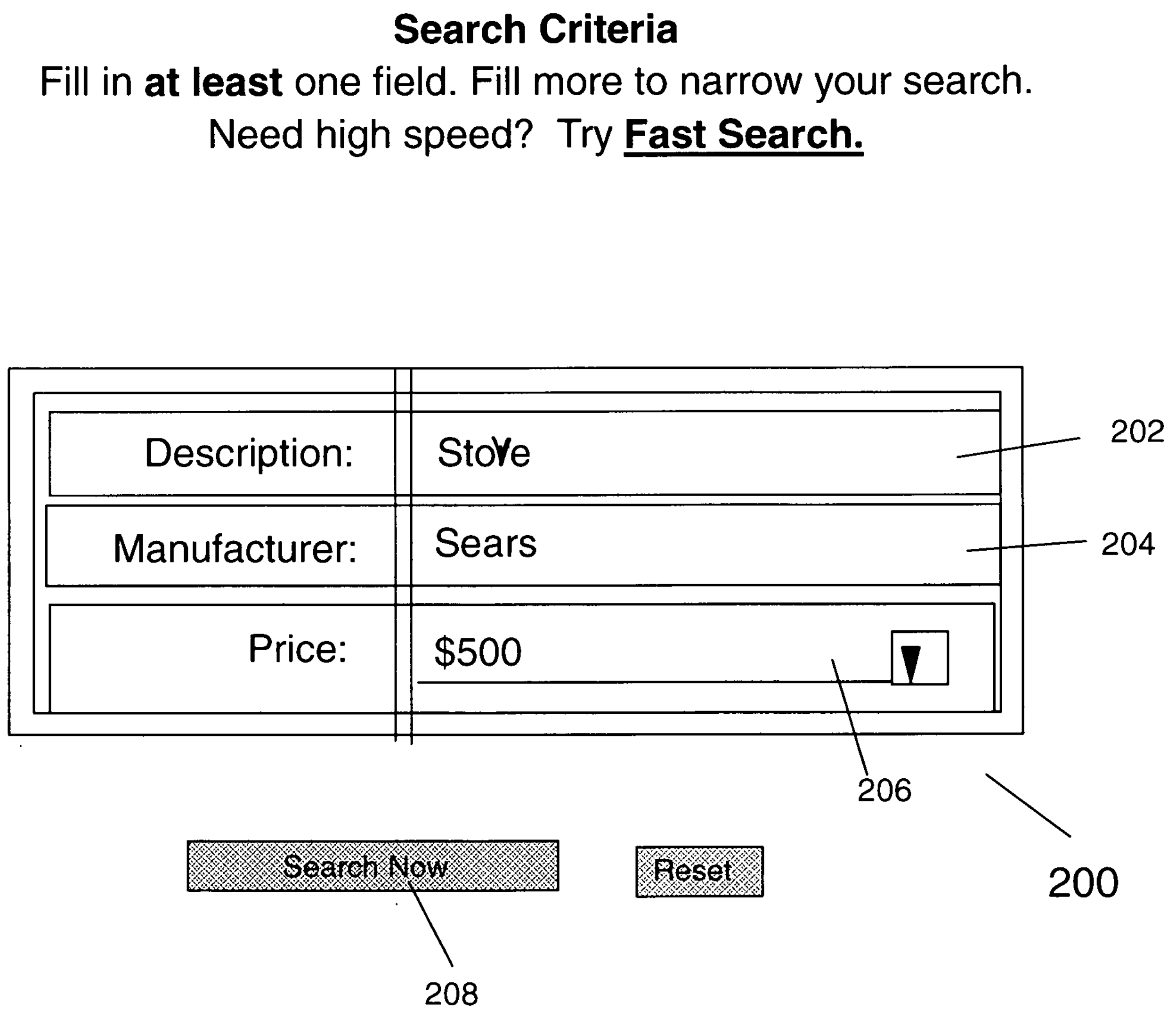


Figure 2


Search Criteria

Fill in **at least** one field. Fill more to narrow your search.

Need high speed? Try **Fast Search.**

Description:	Stove
Manufacturer:	Sears
Price:	$500

Figure 3

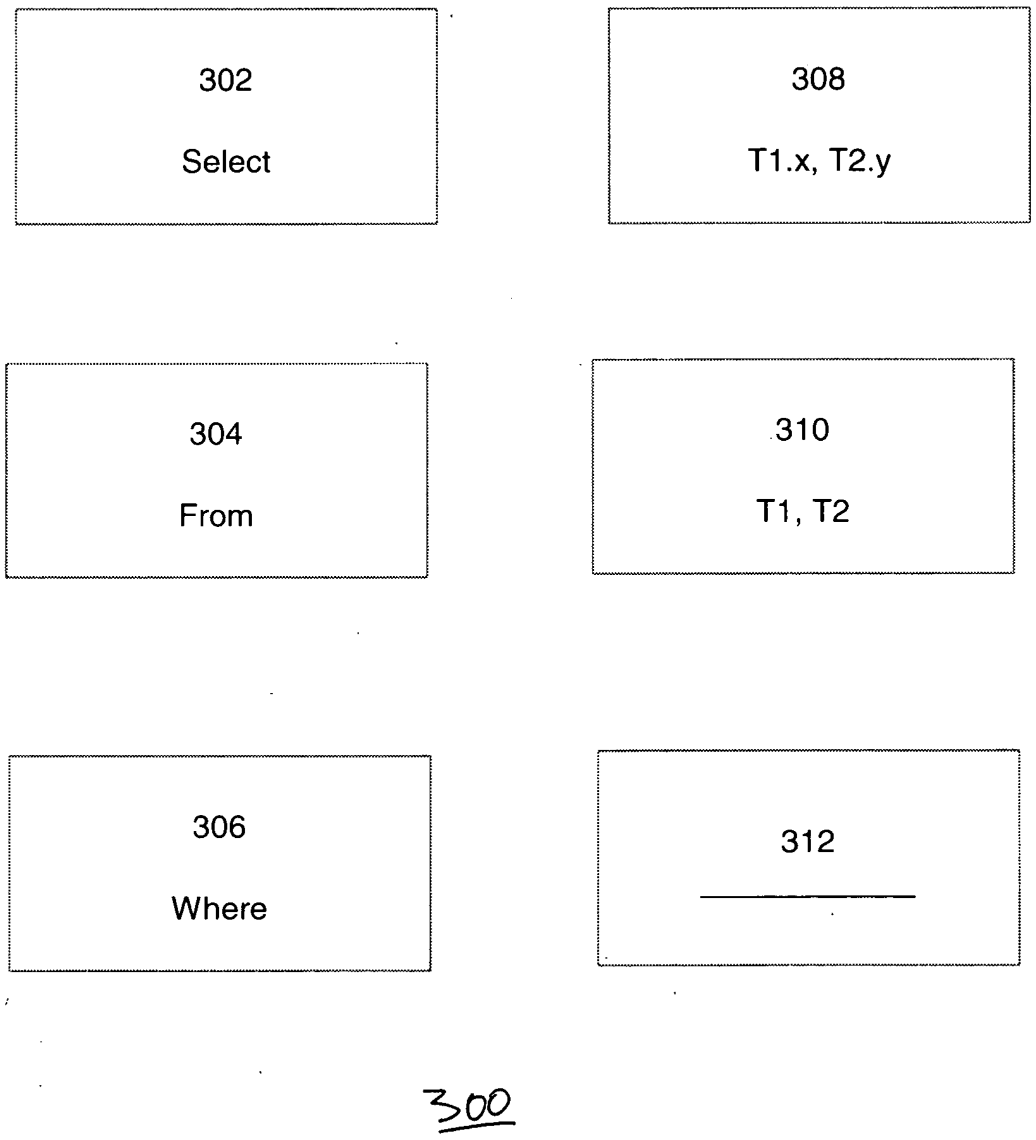
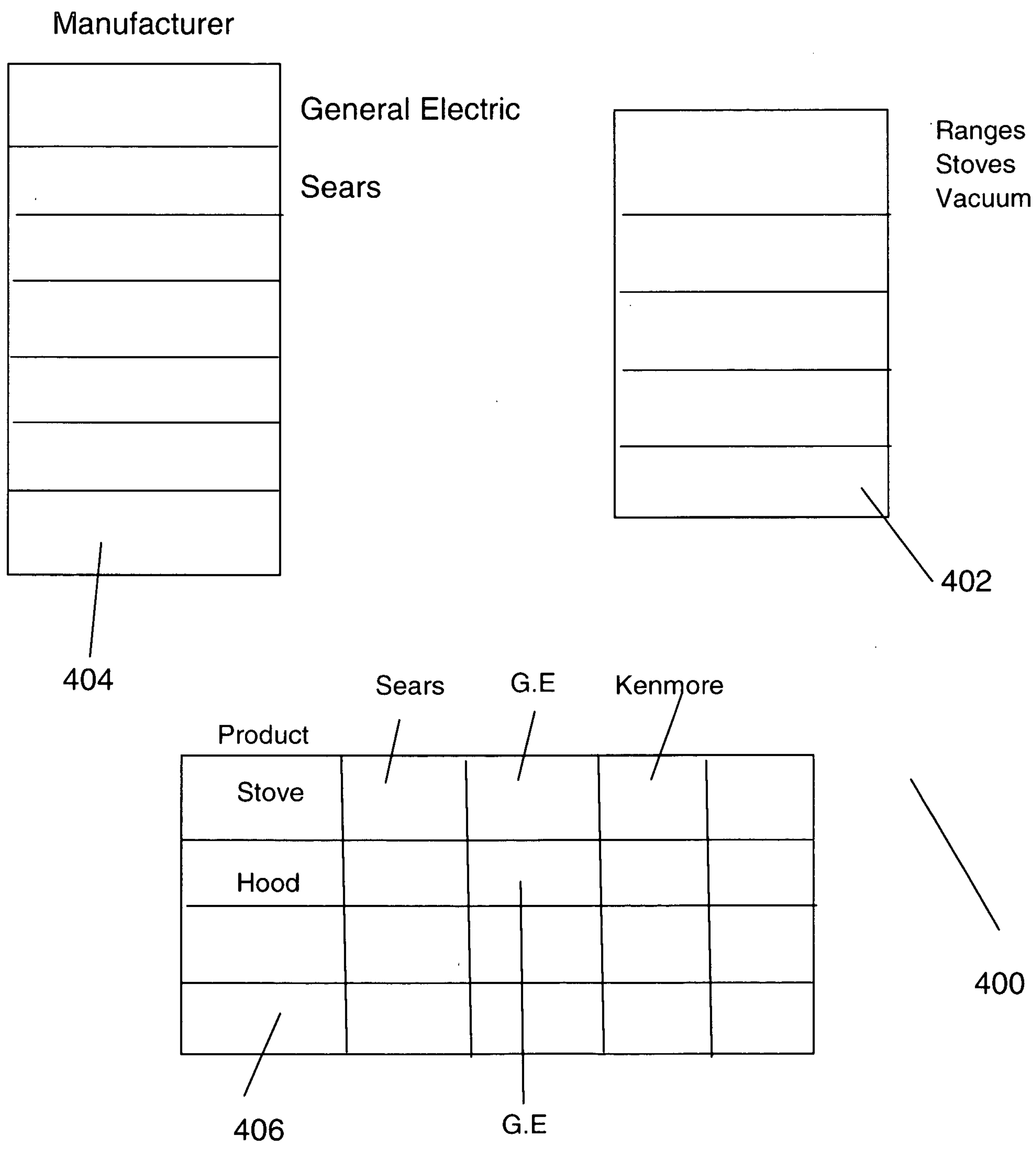


Figure 4



Manufacturer
General Electric
Sears
Ranges
Stoves
Vacuum
402
404
Sears
G.E
Kenmore
Product
Stove
Hood
400
406
G.E

Figure 5
<u>500</u>

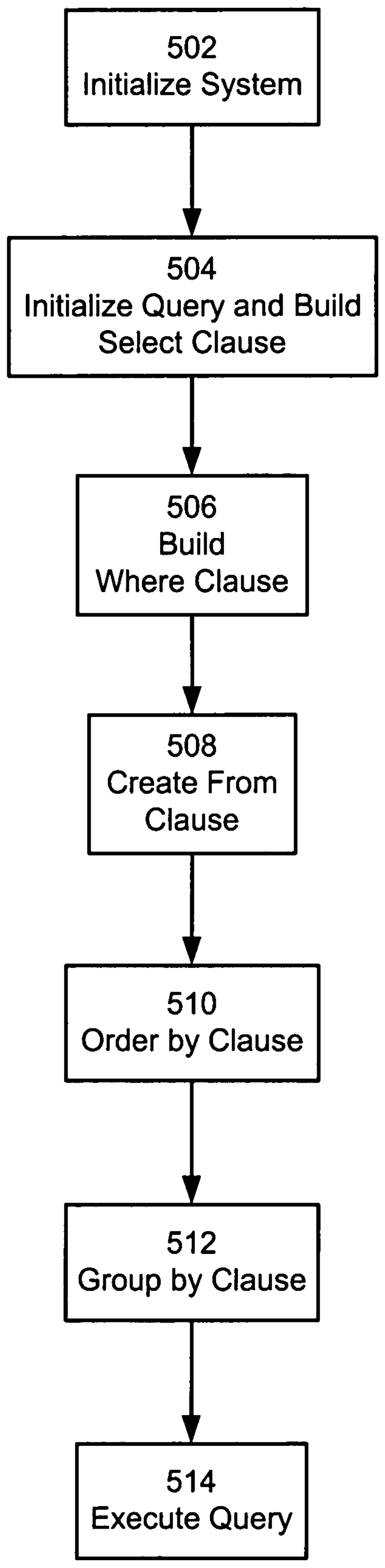

502
Initialize System
504
Initialize Query and Build Select Clause
506
Build Where Clause
508
Create From Clause
510
Order by Clause
512
Group by Clause
514
Execute Query

Figure 6 Rose Diagram

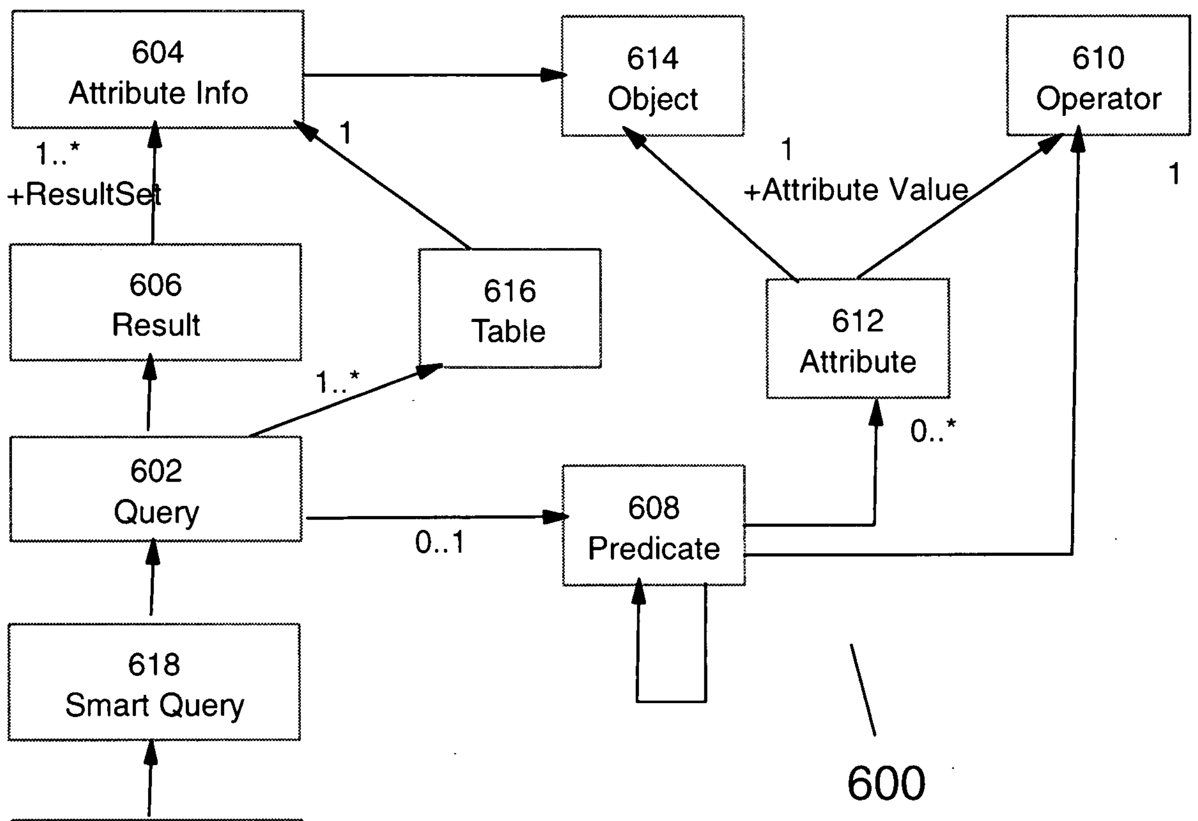


Figure 7

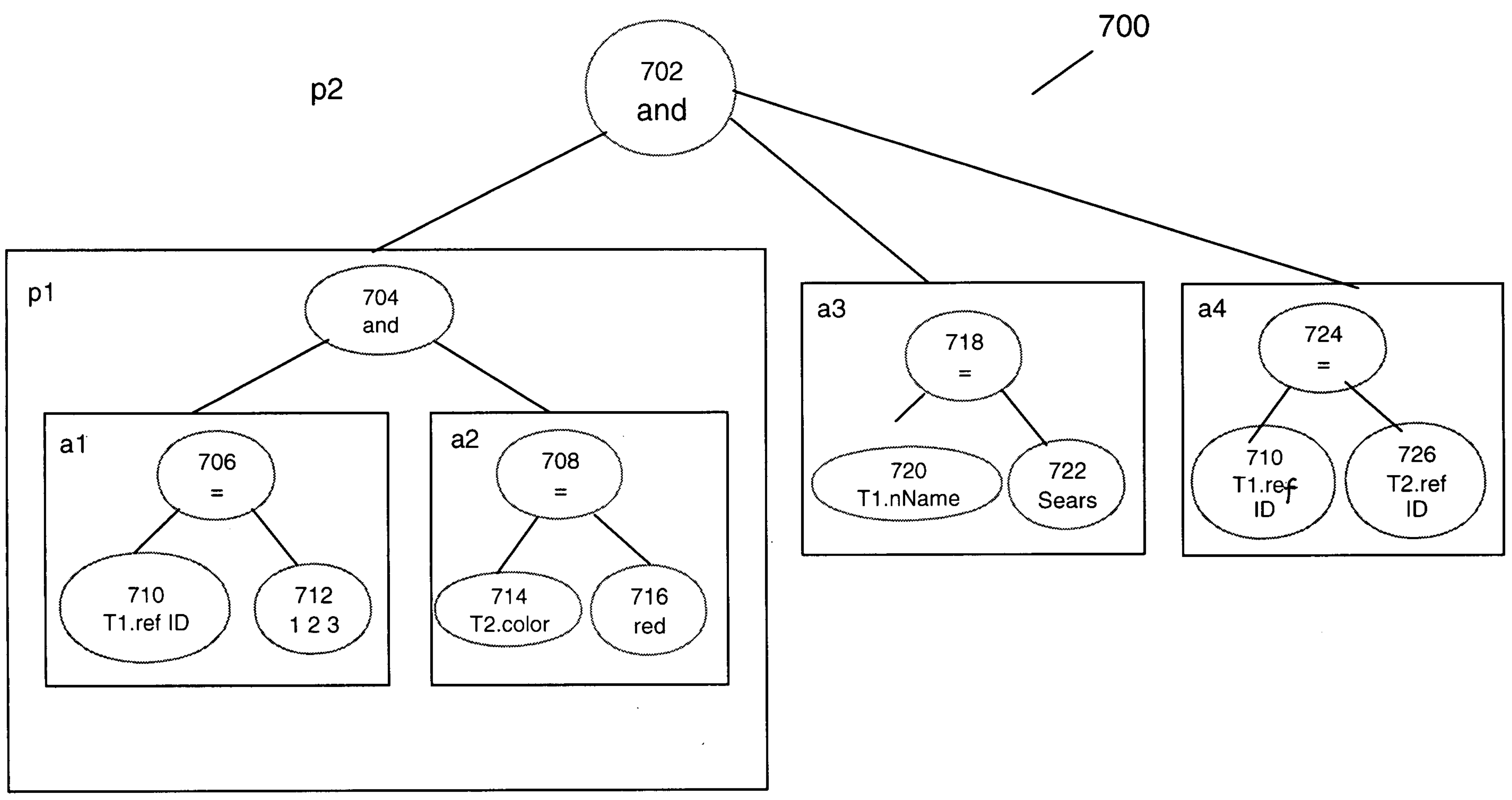

700
p2
702
and
p1
704
and
a1
706
=
710
T1.ref ID
712
1 2 3
a2
708
=
714
T2.color
716
red
a3
718
=
720
T1.nName
722
Sears
a4
724
=
710
T1.ref
ID
726
T2.ref
ID

Figure 8

```
     // construct the simple search conditions
     Attribute attr1 = new Attribute (CatRefIdAttributeInfo, Operator.equal, "123");
     Attribute attr2 = new Attribute (ColourttributeInfo, Operator.equal, "red");
802  Attribute attr3 = new Attribute (ManufatureAttributeInfo, Operator.equal, "Sears");
     Attribute attr4 = new
     Attribute(CatRefIdAttributeInfo,Operator.equal,DescRefIdAttributeInfo,);

     // compose composite search conditions
     Predicate p1 = new Predicate (Operator.and, {attr1, attr2} );
804  Predicate p2 = new Predicate (Operator.and, {p1, attr3, attr4} );

     // execute the query
806  Query q = new Query ()
     q.setResultSet ({ CatRefIdAttributeInfo, ...}) // result set contains catalog entryId
     q.setPredicate (p2);
808  result = q.execute ()
```

800

Figure 9A(i)

```
      public void MCQuery()   throws Exception {

      Debug.setLocalTest(true);

      System.out.println("***************** Merchant Centre *******************");

900   CatalogQuery MCQuery = new CatalogQuery();      901

      // Result set
      MCQuery.addResultSetInfo(new Result(CatEntryIdentifierAttributeInfo.getSingleton()()));
      MCQuery.addResultSetInfo(new Result(StoreInvQuantityAttributeInfo.getSingleton()()));
902   MCQuery.addResultSetInfo(new Result(CatEntDescShortDescAttributeInfo.getSingleton()));
      MCQuery.addResultSetInfo(new Result(CatEntDescNameAttributeInfo.getSingleton()));
      MCQuery.addResultSetInfo(new Result(CatEntryTypeAttributeInfo.getSingleton()));
      MCQuery.setDistinctQualifier(true);

                                                      904
```

Figure 9A(ii)

```
     // Predicate set
     // Part I
     Predicate p11 = new Predicate ();          908a
     p11.setOperator (Operator.or);
     Attribute a111 = new Attribute (CatGrpDescNameAttributeInfo.getSingleton(), Operator.leftlike,
     "CATEGORY X");
     a111.setUppercaseQualifier(true);
910a p11.addOperand (a111);
     Attribute a112 = new Attribute (CatGrpDescNameAttributeInfo.getSingleton(), Operator.leftlike,
     "CATEGORY10");
     a112.setUppercaseQualifier(true);
     p11.addOperand (a112);

     Predicate p12 = new Predicate ();          908a
     p12.setOperator (Operator.and);
     p12.addOperand (new Attribute (ListPriceAttributeInfo.getSingleton(), Operator.gt, "0.0"));
910a p12.addOperand (new Attribute (StoreInvQuantityAttributeInfo.getSingleton(), Operator.gt, "0.0"));
     p12.addOperand (new Attribute (InventoryQuantityMeasureAttributeInfo.getSingleton(), Operator.isnull));
     p12.addOperand (p11);

     Predicate p13 = new Predicate ();          908a
     p13.setOperator (Operator.and);
     p13.addOperand (new Attribute (ListPriceAttributeInfo.getSingleton(), Operator.gt, "0.0"));
     p13.addOperand (new Attribute (StoreInvQuantityAttributeInfo.getSingleton(), Operator.gt, "0.0"));
     p13.addOperand (new Attribute (InventoryQuantityMeasureAttributeInfo.get Singleton(),Operator.isnull));
910a Attribute a13 = new Attribute (CatGrpDescNameAttributeInfo.getSingleton(), Operator.leftlike,
     "CATEGORY5");
     a13.setUppercaseQualifier(true);
     p13.addOperand (a13);

     Predicate p14 = new Predicate ();          908a
     p14.setOperator (Operator.or);
910a p14.addOperand (p12);
     p14.addOperand (p13);
```

Figure 9A(iii)

```
      // Part II
      Predicate p21 = new Predicate ();          908b
      p21.setOperator (Operator.or);
      Attribute a211 = new Attribute (CatGrpDescNameAttributeInfo.getSingleton (), Operator.leftlike,
      "CATEGORY Z");
      a211.setUppercaseQualifier(true);
910b  p21.addOperand (a211);
      Attribute a212 = new Attribute (CatGrpDescNameAttributeInfo.getSingleton (),Operator.leftlike,
      "CATEGORY9");
      a212.setUppercaseQualifier(true);
      p21.addOperand (a212);

      Predicate p22 = new Predicate ();          908b
      p22.setOperator (Operator.and);
      p22.addOperand (new Attribute (ListPriceAttributeInfo.getSingleton(), Operator.gt, "0.0"));
910b  p22.addOperand (new Attribute (StoreInvQuantityAttributeInfo.getSingleton(), Operator.gt, "0.0"));
      p22.addOperand (new Attribute (InventoryQuantityMeasureAttributeInfo.get Singleton(),Operator.isnull));
      p22.addOperand (p21);

      Predicate p23 = new Predicate ();          908b
      p23.setOperator (Operator.and);
      p23.addOperand (new Attribute (ListPriceAttributeInfo.getSingleton(), Operator.gt, "0.0"));
      p23.addOperand (new Attribute (StoreInvQuantityAttributeInfo.getSingleton(), Operator.gt, "0.0")) ;
      p23.addOperand (new Attribute (InventoryQuantityMeasureAttributeInfo.get Singleton(),Operator.isnull));
910b  Attribute a23 = new Attribute (CatGrpDescNameAttributeInfo.getSingleton(), Operator.leftlike,
      "CATEGORY4");
      a23.setUppercaseQualifier(true);
      p23.addOperand (a23);

      Predicate p24 = new Predicate ();          908b
      p24.setOperator (Operator.or);
      p24.addOperand (p22);
910b  p24.addOperand (p23);
      p24.setNotQualifier(true);
      System.out.println(p24.toString());
```

Figure 9A(iv)

```
// Part IV - Join
Predicate p4 = new Predicate ();        912
p4.setOperator (Operator.and);
p4.addOperand (p14);
p4.addOperand (p24);
p4.addOperand (new Attribute (StoreCEntStoreIdentifierAttributeInfo.getSingleton(), 914
Operator.eq, "2"));
p4.addOperand (new Attribute (UsersIdentifierAttributeInfo.getSingleton(), Operator.eq,
"1001"));
//p4.addOperand (p33);

MCQuery.setPredicate(p4);       916

// Join
System.out.println("Auto Join : ");
MCQuery.printJointRelationships();

// Resolve source tables
MCQuery.resolveSourceTables();     918

// ORDER, GROUP and HAVING set
MCQuery.addResultOrder(CatEntryIdentifierAttributeInfo.getSingleton(),
Operator.desc);         920

System.out.println("MC Query : ");
System.out.println(MCQuery.toString());

com.ibm.commerce.base.objects.Cursor cursor = new
com.ibm.commerce.base.objects.Cursor();
java.util.Vector v = MCQuery.execute(cursor);        922
System.out.println("MC Query first 10 Result: ")
System.out.println(v);
cursor.increment();
v = MCQuery.execute(cursor);         922
System.out.println("MC Query next 10 Result: ");
System.out.println(v);

}
```

Figure 9B

```
public void setPredicate(Predicate aPredicate) throws Exception {

Predicate additionalP = additionalPredicate();    924
if (additionalP != null) {
 Predicate p = new Predicate();
 p.setOperator(Operator.and);
926   p.addOperand(aPredicate);
 p.addOperand(additionalP);
 setTableJointPredicate(p);
}
else
 setTableJointPredicate(aPredicate);
}


private void setTablejointPredicate(Predicate aPredicate) throws Exception {

Predicate jointP = resolveJointPredicate(aPredicate);
if (jointP != null) {
 Predicate p = new Predicate();
 p.setOperator(Operator.and);
 p.addOperand(aPredicate);
 p.addOperand(jointP);
 super.setPredicate(p);
}                                                  930
else
 super.setPredicate(aPredicate);
}
```

Figure 10

1000

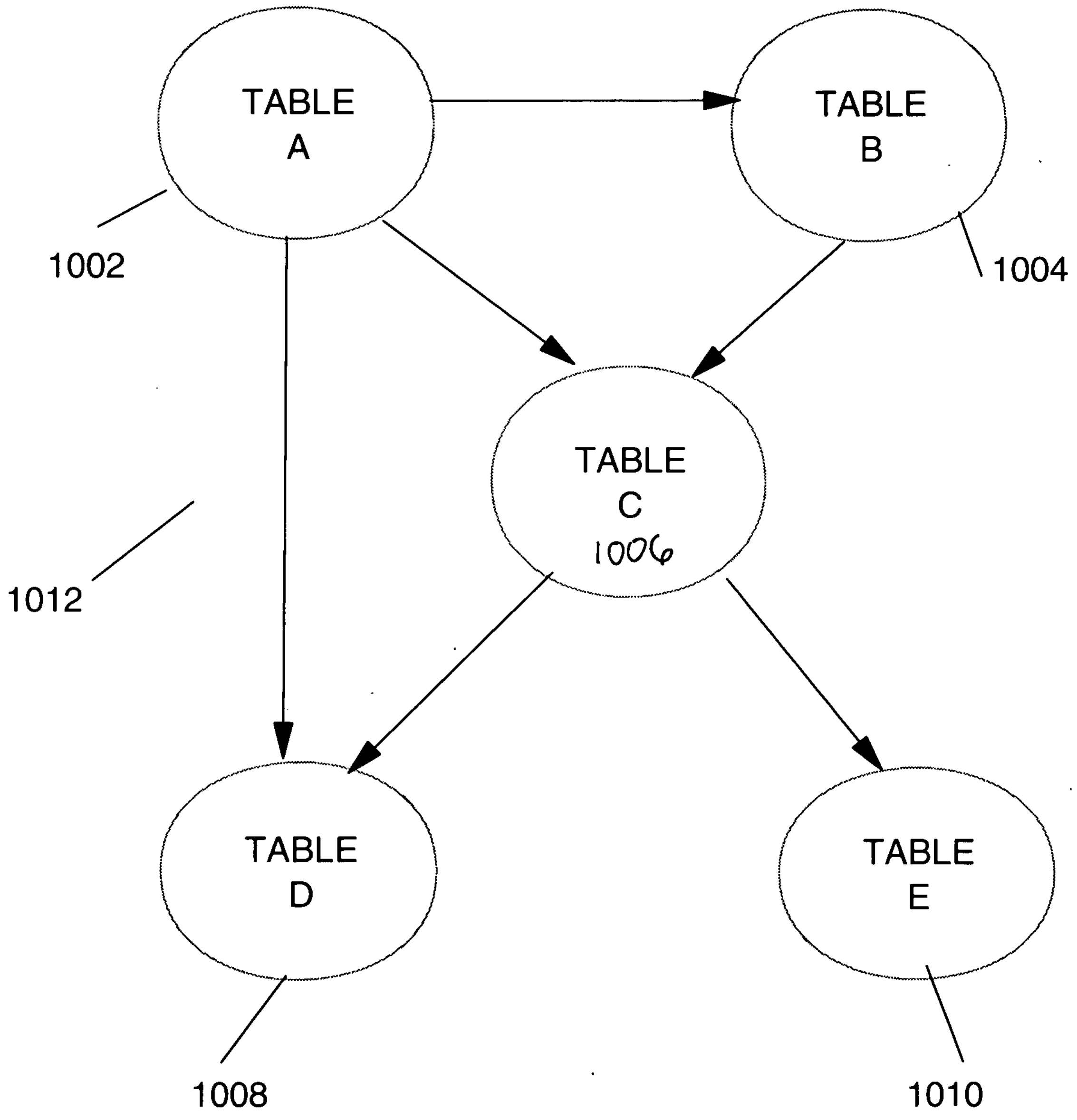


Figure 11

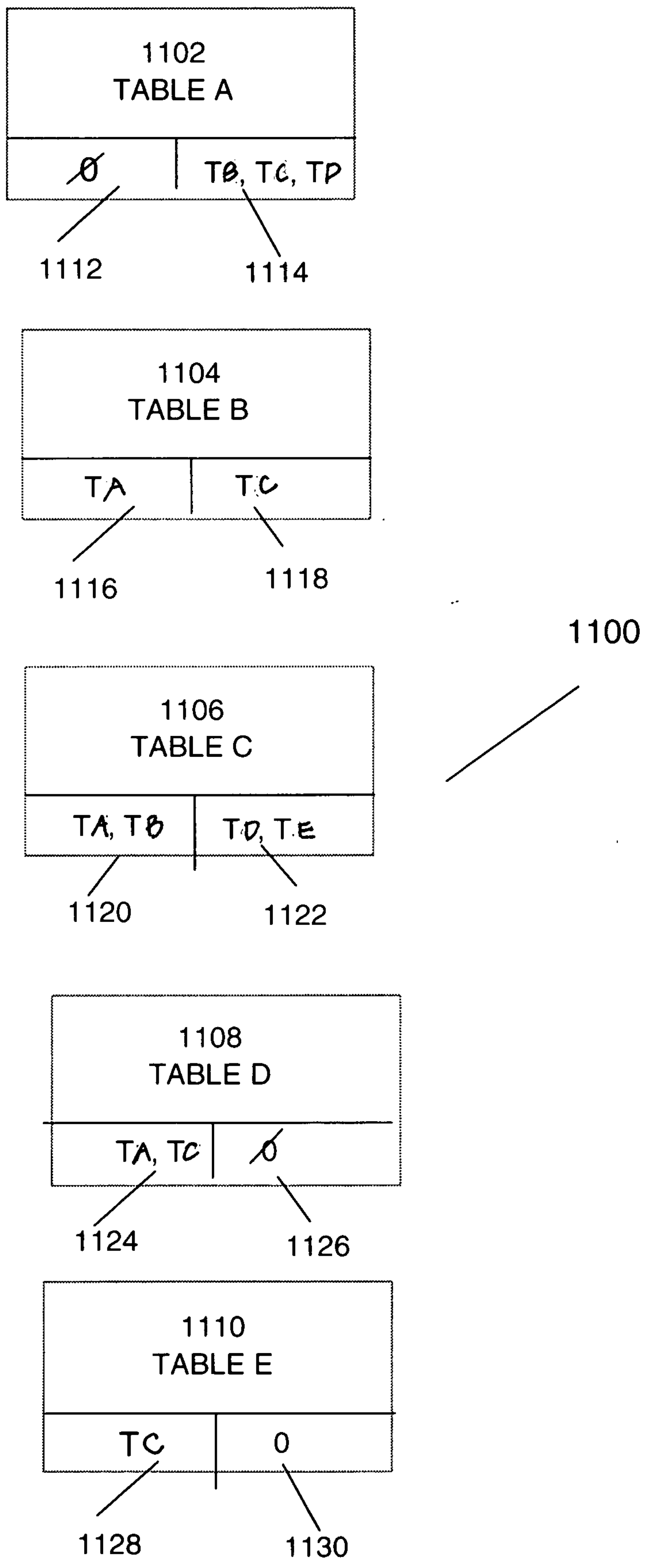
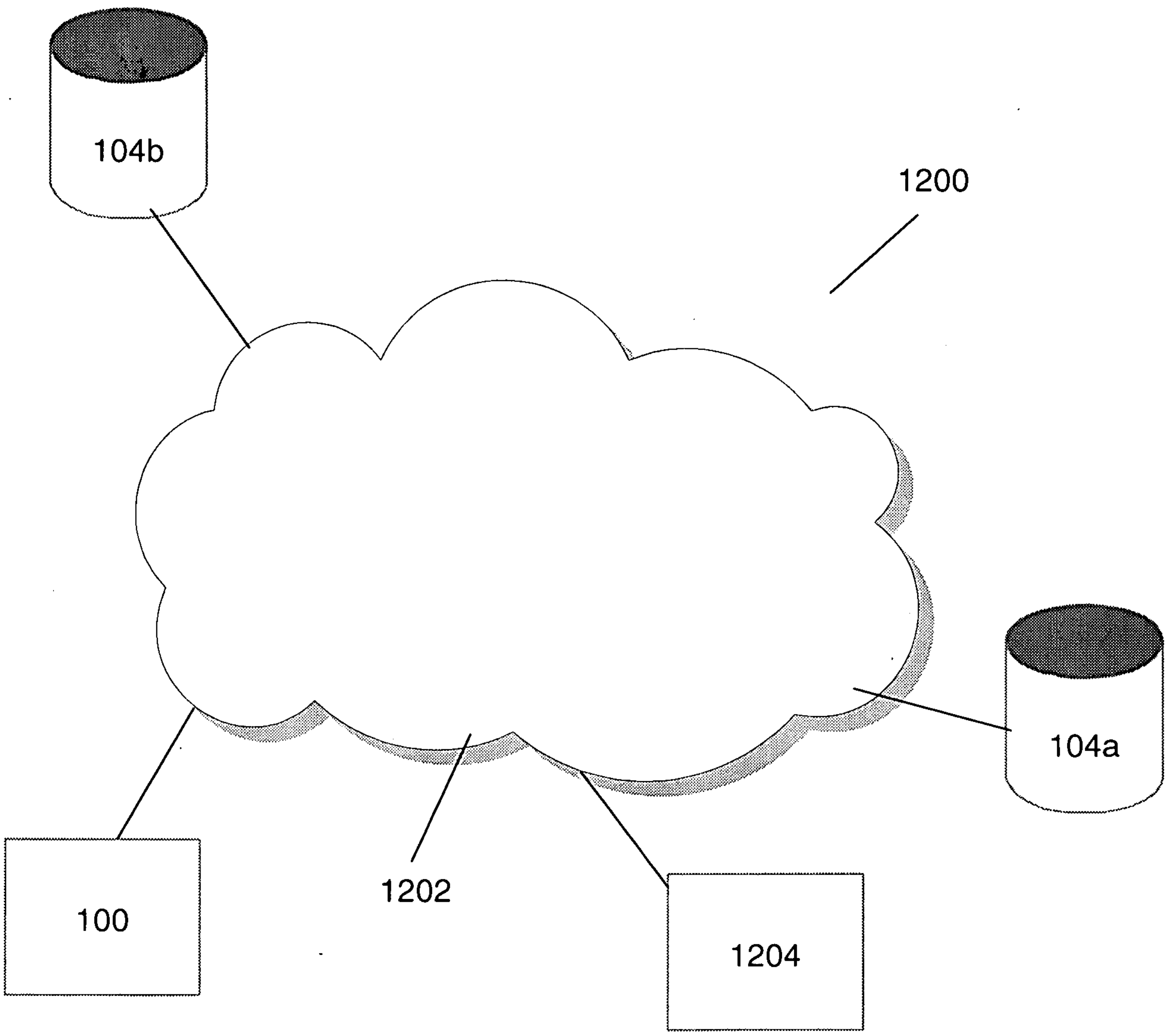

1102
TABLE A
∅
TB, TC, TD
1112
1114
1104
TABLE B
TA
TC
1116
1118
1100
1106
TABLE C
TA, TB
TD, TE
1120
1122
1108
TABLE D
TA, TC
∅
1124
1126
1110
TABLE E
TC
0
1128
1130

Figure 12


104b
1200
104a
100
1202
1204